at Mainz. In recent years he mainly studied geochemical and cosmochemical problems. He was a member of various international organizations and participated in numerous scientific conferences. His studies in the fields of radiochemistry, of the geochemistry of inert gases, of absolute age determinations etc are of lasting value.

3(0) SOV/7-59-2-1/14

AUTHOR: Vinogradov, A. P.

TITLE: Academician A. Ye. Fersman (Akademik A. Ye. Fersman) (75th Birth Anniversary) (k 75-letiyu so dnya rozhdeniya)

PERIODICAL: Geokhimiya, 1959, Nr 2, pp 103-104 (USSR)

ABSTRACT: Aleksandr Yevgen'yevich Fersman was born in St. Petersburg on November 8, 1883. During his studies at Moscow University he applied himself particularly to the study of geochemistry. At the said university he met V. I. Vernadskiy, who became his closest friend. Having finished his studies he did post-graduate work at several foreign universities and came to know a number of European ore deposits. In 1911 he returned to St. Petersburg Akademiya nauk (Academy of Sciences), but found his field of work at the mineralogicheskiy muzey Akademii nauk (Mineralogical Museum of the Academy of Sciences) too narrow. During the years prior to the October Revolution he traveled throughout Russia in search of new ore deposits. His talents became especially apparent after the October Revolution. He mainly carried out investigations in the field of geochemistry, in fact, he and V. I. Vernadskiy are regarded as the founders of this branch of science. Besides his four-

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volume book"Geokhimiya"("Geochemistry") he has published various books on geochemical and mineralogical prospecting methods of foreign mineral raw materials and precious stones. He departed almost a decade and a half ago, but his students, collaborators, and friends remain under the spell of his strong personality.

3(7),3(9)

AUTHORS: Vinogradov, A. P., Kutyurin, V. M., Zadorozhnyy, I. K.

SOV/7-59-3-1/13

TITLE: Fractionation of the Isotopes of Atmospheric Oxygen (Fraktsionirovaniye izotopov atmosfernogo kisloroda)

PERIODICAL: Geokhimiya, 1959, Nr 3, pp 195-205 (USSR)

ABSTRACT: Compared with the oxygen of the hydrosphere and of photosynthesis, atmospheric oxygen has a higher content of the isotope O^{18} (Table 1). The present paper was written for the purpose of explaining this difference. The two-beam mass spectrometer MS-2 was used for measurements, and atmospheric oxygen was used as standard. Investigations were carried out of the oxygen of the photosynthesis of diatom algae carried out at the Sevastopol'skaya biologicheskaya stantsiya (Chernoye more) (Sevastopol' Biological Station (Black Sea)) and of the fresh-water plant Elodea canadensis (Table 2). Herefrom results a coefficient of O^{18} enrichment in the atmosphere of 1.018. Moreover, fractionation in the soil was investigated: A minimum effect (α=0.997) occurred only in the case of considerable humidity. A thorough investigation was carried out of

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Fractionation of the Isotopes of Atmospheric Oxygen

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fractionation in the ocean. The samples were collected during the second voyage of the Morskaya Antarkticheskaya ekspeditsiya na d/e "Ob'" (Antarctic Sea Expedition of the Diesel-electric vessel "Ob'"). The points where samples were taken are shown on a chart. Samples were taken from various depths at each place (Table 3); for 5 places the variation of the total oxygen- and O^{18} content with depth is graphically represented (Figs 2-6). The fractionation coefficient is 1.010; this is not sufficient in order to be able to explain the high O^{18}-content of the atmosphere. According to the authors this content is a function of the CO_2 -content of the atmosphere. The reason for this is the dissociation of CO_2 in the stratosphere. This would provide the possibility of drawing conclusions from the isotope-ratio in fossils with respect to the concentration of CO_2 in the previous atmosphere. There are 7 figures, 3 tables, and 13 references, 5 of which are Soviet.

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Fractionation of the Isotopes of Atmospheric Oxygen

SOV/7-59-3-1/13

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR, Moskva (Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, AS USSR Moscow)

SUBMITTED: January 14, 1959

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VINOGRADOV, A.P., akademik

Fundamental problems of radiochemistry. Khim.nauka i prom. 4 418-422 '59. (MIRA 13:8)
(Radiochemistry)

VINOGRADOV, A.P.

3(5) P2

AUTHOR: None Given SOV/7-59-6-15/17

TITLE: Abstract of the Most Important Articles From "Geochimica et Cosmochimica Acta", Vol 15, Nr 1/2, 1958

PERIODICAL: Geokhimiya, 1959, Nr 6, pp 564 - 567 (USSR)

ABSTRACT: A short abstract is given of the following articles:
Hitoshi Sakai and Kazuo Sato: Isotopic composition of the common lead of Japan
P. W. Richardson and H. E. Hawkes: Adsorption of copper on quartz
R. Coulomb, M. Goldsztein, and M. le Mercier: Uranium in some French granites
A. E. Ringwood: The constitution of the mantle - II. Further data on the olivine-spinel transition
Marjorie Hooker: Data of rock analyses - IV Icelandic periodical and serial literature. Bibliography of rock analyses
H. Sakai and H. Nagasawa: Fractionation of sulphur isotopes in volcanic gases
R. W. Stoenner and J. Zähringer: Potassium - argon age of iron meteorites
H. F. Phillips and I. A. Breger: Isolation and identification

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Abstract of the Most Important Articles From "Geochimica et Cosmochimica Acta", Vol 15, Nr 1/2, 1958 SOV/7-59-6-15/17

of an ester from a crude oil
R. F. Conley and W. M. Bundy: Mechanism of gypsification
G. Kullerud and G. Donnay: Natural and synthetic ferroselite. A roentgenographic mimesis of rammelsbergite
A. P. Vinogradov: The isotopic composition of rocks of the earth and of meteorites
Helmut G. F. Winkler and Hilmar von Platen: Experimental metamorphosis of rock - II. Formation of anatectic granitic melts in the metamorphosis of NaCl-containing clays that are free from lime.
R. M. Garrels and C. R. Naeser: Equilibrium distribution of dissolved sulphur species in water at 25°C and 1 atm total pressure
H. T. Evans, Jr. and R. M. Garrels: Thermodynamic equilibria of vanadium in aqueous systems as applied to the interpretation of the Colorado Plateau ore deposits

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3(1) SOV/11-59-10-2/16

AUTHOR: Vinogradov, A.P.

TITLE: Meteorites and the Earth's Crust

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geologicheskaya, 1959, No. 10, pp 5-27, (USSR)

ABSTRACT: Problems of origin of various types of meteorites in comparison with the origin of volcanic rocks of the earth are treated in this article. All the meteorites can be divided into two groups, chondrites and achondrites. Chondrites containing chondrules of various dimensions are divided into unchanged, recrystallized (changed) and carbonaceous, containing carbon, water and, in some cases, a chloritic mineral. On the average, all meteorites of this group contain about 12% iron and 6% troilite. Their body is composed of olivine with enstatite, bronzite and hypersthene (table 1 and 2). Achondrites are divided into two groups different by their structure and mineralogical and chemical composition, the feldspar-containing group and that without feldspar (Tables 1, 2). Feldspar-containing achondrites usually contain anortite, and their

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structure and mineralogical and chemical characteristics correspond to the characteristics of gabbro-diabases. Their breccia-like structure is a special feature of all achondrites. According to the author, the formation of all meteorites occurred in zones of feeble gravitation: the porosity of meteorite bodies proves it. As to the rare elements in meteorites and in the volcanic rocks - their content in meteorites is much lower than in volcanic rocks. The general alkaline content decreases from chondrites to feldsparless achondrites, which in turn have the highest SiO_2 content. The Ca/Sr relation in all stone meteorites and dunites varies from 1000 to 2000 owing to a small Strontium content, whereas in volcanic rocks this content varies from 50 to 200. The author also gives variation diagrams of content of other rare elements (figures 1-4). A decrease in the alkaline content in meteorites can tentatively be connected with the high temperature differentiation processes of meteoritic substance into various types of meteorites, though the degree of such a differentiation is only slight. Thus, the differentiation process of meteorites is

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not identical with processes occurring in the Earth's crust such as liquation, fractional crystallization, etc. As the dunites in the volcanic rocks contain still less rare elements, the author thinks that dunites are residual rocks from the melting out of the light fraction (the Earth's crust) of the Earth's mantle substance by its composition resembling the chondrites. Studying the isotopic composition of meteorites and volcanic rocks, the author states that the sulfur contained in different meteorites is absolutely identical by its isotopic composition $S^{32}/S^{34} = 22.20$, which indicates a reducing character of the medium in which the meteorites were formed. The isotopic sulfur composition in dunites is either near or identical to that of meteorites, but is considerably different from the isotopic sulfur content of volcanic rocks, particularly of granites (tables 8-9). The same tendency of increasing dispersion of isotopic composition is observed for the oxygen content in volcanic rocks from the plutonic dunites to the outcropping granites (tables 10-12). The isotopic oxygen composition

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in meteorites is identical and the isotopical O^{16}/O^{18} composition in dunites is the nearest to that of meteorites (Table 13). Only carbonaceous meteorites are an exception, their isotopic oxygen composition shows an increase in O^{18} (tables 14-17). The isotopic $C^{12}/C13$ composition in volcanic rocks and meteorites is almost similar. There is a tendency to increase the C^{13} content in more acid rocks of the Earth's surface. The isotopic carbon content in dunites is again very similar to that of meteorites (table 18-19). In general, taking the isotopic compositions of sulfur, oxygen and carbon as a whole, their correlations in all meteorites are very similar, and dunites, more than other volcanic rocks, are comparable to meteorites (chondrites) by their isotopic correlation. This proves, according to the author, that the formation of meteorites occurred in reducing conditions and at higher temperatures than those observed in the Earth's magma differentiation processes and that the processes which governed the formation of meteorites were quite different from those on the Earth. To determine the character of distribu-

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tion of elements and isotopes in meteorites, the author subjected a thin rod cut out of a meteorite to so-called zonal melting. If a narrow part of this rod is heated to a melting point and the heater is repeatedly moved along the rod in the same direction so that the menisc of the liquid phase always passes over the hard phase, then the substances lowering the melting temperature will pass into the liquid phase, and those increasing the temperature will remain in the hard phase. The smaller is the distribution coefficient

$$K = \frac{K_{\text{hard phase}}}{K_{\text{Liq. phase}}}$$

the more effective is the differentiation. In this case, the silicate phase of a meteorite was subjected to the zonal melting. The analysis of the meteorite was made by L.S. Selivanov separately for the magnetic and non-magnetic fraction. By a repeated demagnetization, 11% magnetic and 89% non-magnetic fraction was obtained. The composition of the non-magnetic fraction is as follows: SiO_2 -

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44.83%; TiO_2 - 0.12%; Al_2O_3 - 1.80%; Cr_2O_3 - 0.71%; FeO - 14.46%; CaO - 2.33%; MgO - 27.43%; MnO - 0.39%; Na_2O - 0.56%; K_2O - 0.10% and P_2O_5 - 0.74%. Not taking into account the detail of chemical composition of an average chondrite, these chondrites are composed of two main molecules, the olivine molecule Mg_2SiO_4 (Fe_2SiO_4 content 25%) and the molecule of a rhombical pyroxene $MgSiO_3$ ($FeSiO_3$ content 25%). The phase diagram of the MgO-SiO_2 system, which gives the $2MgOSiO_2$ and $MgOSiO_2$ phases is well known. In this system, the $2MgOSiO_2$ melts at 1800°, and the lowest temperature of the liquid phase of this system corresponds to the $MgOSiO_2$ composition which incongruently melts according to the formula

$$2MgSiO_3 = Mg_2SiO_4 + SiO_2.$$

All other components of the silicate phase are distributed in the Mg_2SiO_4 and SiO_2 phases. The more or less exact content of olivine and pyroxene in the chondrites is given (table 20). The amount of CiO_2 content obtained by the melting of a chondrite is calculated, according to W. Wahl (US)

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in %:

The Composition of Pyroxenes (in %)		
$CaSiO_3$ - 2.26	0.58	SiO_2
$MnSiO_3$ - 0.51	0.14	"
$MgSiO_3$ - 16.50	4.93	"
$FeSiO_3$ - 7.36	1.67	"
26.23	7.3	

Consequently, 7.3% of SiO_2 is for the chondrite, and the olivine fraction is in this case $MgSiO_4$ 30.67 + Fe_2SiO_4 13.85 = 44.52% of the whole chondrite. Thus a maximum 7.3% of SiO_2 (plus admixtures) could be melted, of a chondrite, at a temperature of 1557°. The results of zonal melting, described in detail, of the silicate fraction of a meteorite are given (table 20). From it, it can be seen that about 2% of SiO_2 was squeezed out from the silicate fraction. The amount of volatile components in the silicate fraction is extremely low and only sulfur is volatilized and deposited on the walls of

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the quartz tube. If a volatile component F is added to the silicate fraction, at a temperature of about 1600°, mainly potassium is volatilized, then uranium and other elements (table 21). Supposing that the Earth's mantle is composed of substances which by their composition are close to the chondrite substance, and that the formation of the Earth's crust is the result of the melting out, and degasification of the mantle is analogous to a vertical zonal melting coinciding with the Earth's radius, then the possible thickness of the Earth's crust can be tentatively calculated. The zonal melting and subsequent calculations show that the maximum thickness of the Earth's crust will be 7% of the thickness of the Earth's mantle. The dunites are a residual product of the Earth's mantle melting and, as a rule, contain about 2% of pyroxene. Thus, if the whole mantle substance were melted, about 6% of fusible silicate material would be obtained. It explains, says the author, why the Earth's crust is relatively so thin. The thickness of the Earth's mantle can be approximately calculated for the determination of the concentration

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of a given chemical element in the crust. Obviously, the melting and degasification process in the Earth's mantle and the differential process is continuous. Isotopic composition of various metals show that (even for the same metal) the process of their separation from the magma occurred at widely different epochs. Two different differentiation processes must be considered in the formation of meteorites: one for the formation of chondrites and iron or stone-iron meteorites and another for the formation of achondrites. In the first process, the similitude in the dimensions and mineralogical and chemical composition of chondrules indicates the existence, at some stage of evolution of the meteoritic substance, of a different phase of this substance. Presumably, it was in a state of nebula formed by the drops of liquid silicates, agglomerated with Fe after many recondensation and purifying processes, when passing the zone of 1,800°, and forming the chondrules. These meteorites were formed as a result of agglomeration of separate chondrules and of loose parts of chondrules destroyed during collisions in space. The chemical composition of achon-

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drites without the feldspar indicates that their formation occurred in small spatial bodies without the participation of volatile components, and at higher temperatures than observed in the Earth's crust. The author compares the process of formation of feldspar-containing achondrites to the regenerating process of Dinas bricks used for lining in open-hearth furnaces and which were for a long time subjected to high temperatures. Zones of various composition were formed in these bricks and the transitory zone was characterized by the accumulation of Al_2O_3; CaO and TiO_2 as in feldspar containing achondrite. Thus two basic processes can be observed in the formation of meteorites; 1) mixture and agglomeration of silicate chondrules with iron masses and troilites from which chondrites and iron-stone and stone meteorites were formed and 2) the formation of achondrites from the chondrites on celestial bodies of small dimension, which explains the absence of volatile elements. The name of A.V. Trofimov is mentioned in this article. There are 22 tables, 4 graphs, 4 photographs and 32 references, 15 of which are Soviet, 9 English, 4 Ameri-

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can, 2 German, 1 French and 1 Swiss.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V.I. Vernadskogo AN SSSR, Moskva (Institute of Geochemistry and Analytical Chemistry imeni V.I. Vernadskiy of the AS USSR, Moscow)

SUBMITTED: January 10, 1959

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5(0)
AUTHORS: Vinogradov, A. P., Alimarin, I. P., SOV/32-25-2-78/78
Tananayev, I. V., Dymov, A. M., Terent'yev, A. P.,
Lur'ye, Yu. Yu., Chernikhov, Yu. A., Korenman, I. M.,
Kuznetsov, V. I., Gel'man, N. E., Klimova, V. A.,
Sheveleva, M. S., Chumachenko, M. N., Terent'yeva, Ye. A.
and others

TITLE: Mirra Osipovna Korshun (Mirra Osipovna Korshun)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 2, p 255 (USSR)

ABSTRACT: Mirra Osipovna Korshun, one of the leading scientists in the field of the microanalysis of organic compounds, died on December 1, 1958. The deceased graduated in 1929 from the II MGU where she had studied chemistry. In 1933 she became head of the analytical group. From 1935 onward she was Head of the Laboratory for Microanalyses at the Institut organicheskoy khimii (Institute of Organic Chemistry) and, in recent years at the Institut elementoorganicheskikh soyedineniy AN SSSR (Institute of Elemental-Organic Compounds, AS USSR). Moreover, she was a Member of the Komissiya po analiticheskoy khimii pri Prezidiume AN SSSR (Commission for Analytical Chemistry

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Mirra Osipovna Korshun

With the Presidium of the AS USSR). In 1958 she was appointed Member of the Komitet po mikrokhimicheskim metodam Mezhdunarodnogo soyuza po chistoy i prikladnoy khimii (Committee on Micro-Chemical Methods of the International Association for Pure and Applied Chemistry). M. O. Korshun introduced into organic analysis the principle of "pyrolytic combustion" in the empty tube which makes it possible to determine simultaneously several elements contained in one weighed portion of complicated organic compounds. The school of organic microanalysis founded by the deceased is still being further developed in the USSR in the spirit of her work.

COUNTRY :GDR D
CATEGORY :Cosmochemistry. Geochemistry. Hydrochemistry

ABS. JOUR. : RZKhim., No. 21 1959, No. 74525

AUTHOR :Vinogradov, A. P., Tugarinov, A. Zh., Zhirova, V.V.
INST. :Not given
TITLE :On the Age of Granite and Ore Occurrences in Saxony

ORIG. PUB. :Freiberger Forschungsh, 1959, C, No 57, 73-85

ABSTRACT :The authors have analyzed 15 samples of metemorphic rocks and granites from Saxony and from Czechoslovakia. The following composition ranges were observed: Ar, $(4.2\text{-}9.32)\cdot10^{-5}$ in rocks and $(8\text{-}11.6)\cdot10^{-5}$ cm³/gm (from 8 samples) in micas; K, 2.72-5.59 and 5.3-9.9%, respectively; age by the Ar-method, 200-650 and 280(?)-380 million years. The uranium pitch [sic] of various generations contained 53.3-70.3% U and 0.104-2.68% Pb. The isotope composition of Pb in the oldest uranium

CARD: 1/4 *Zybov, S. A., Knorre, K. G., and Lebedev, V. I.

COUNTRY : GDR
CATEGORY :

ABS. JOUR. : RZKhim., No. 21 1959, No. 74525

AUTHOR :
INST. :
TITLE :

ORIG. PUB. :

ABSTRACT : ore (3 samples) was found to be: Pb 204 0.44, 0.42, 0.594; Pb 206 73.89, 73.70, 65.22; Pb 207 9.85, 9.87, 11.84; Pb 208 15.78, 15.01, 72.35; estimated age (from the ratios Pb 207/Pb 206, Pb 206/U 238, Pb 207/U 235) 180 million years. Two other samples showed Pb 204 0.7 and 1.00, Pb 206 60.08 and 86.96, Pb 207 13.10 and 21.75, Pb 208 26.12 and 37.47, respectively; age 100 and 9 million years. The Pb from galenite deposits in Saxony and in Thuringia (8 samples) was found

CARD: 2/4

CATEGORY :

ABS. JOUR. : RZKhim., No. 21 1959, No. 74525

AUTHOR :
INST. :
TITLE :

ORIG. PUB. :

ABSTRACT : to have the isotope composition: Pb 206/Pb 204 17.72-18.3; Pb 207/Pb 204 15.19-15.37; Pb 208/Pb 204 36.77-37.45. The authors conclude that Saxony has been the scene of at least three intrusive cycles 360-380, 300-320, and about 200 million years ago. The ore deposits in Saxony have been subjected to hydrothermal metamorphism at least twice; this has led to the regeneration of the ores during the Cretaceous Period (about 100 million years ago) and in the Upper-Tertiary

CARD: 3/4

D

COUNTRY : GDR
CATEGORY :
ABS. JOUR. : RZKhim., No. 21 1959, No. 74525
AUTHOR :
[illegible] :
TITLE :

ORIG. PUB. :

ABSTRACT : Period (about 5 million years ago). The authors are of the opinion that the Devonian-Carboniferous Period on the geologic time scale should be modified by moving the Carboniferous Period downwards and the Permian-Triassic Period to 'younger' times.

R. Khmel'nitskiy

CARD: 4/4

K/(1)

AUTHORS: Vinogradov, A. P., Academician, Kutyurin, V. M., SOV/20-125-5-54/61
Ulubekova, M. V., Zadorozhnyy, I. K.

TITLE: The Isotopic Composition of Photosynthetic Oxygen (Izotopnyy sostav kisloroda fotosinteza)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 5, pp 1151-1153 (USSR)

ABSTRACT: The oxygen mentioned in the title occurs in water and is the result of dehydrogenation (Refs 1,2). The attempt was made to interprete the difference between the isotopic composition of oxygen occurring in water and obtained from the photosynthesis (1 - 2.5‰) as a methodical mistake or by an exchange between oxygen separated in the photosynthesis and cellular water (Ref 3). Without knowledge of the mechanism of oxygen separation in the photosynthesis the probability of such an exchange could not be denied (Ref 3). This exchange was, however, soon refuted: in the electrolysis (Ref 4) as well as in the case of the catalase effect (Ref 5) no exchange takes place between O_2 and H_2O, OH, HOOH as well as -O-O-. Since it was therefore necessary to define precisely the composition mentioned in the title, especially for marine organisms, the authors

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investigated the topic mentioned with the water weed (Elodea canadensis) (fresh water), on the one hand, and with phytoplankton (mainly Diatomaceae algae, sea water), on the other hand. The photosynthesis took place in water treated with argon free from oxygen (O_2-content 0.3-1 ml/liter) at sunny weather and under optimum conditions. Table 1 shows the results. The disturbing effect of the residual respiration oxygen, which was heavier in consequence of preferred absorption of O^{16}, was eliminated as far as possible by repeated extraction of the oxygen produced by photosynthesis. The method used for fresh water and the water weed had to be replaced by that of Winkler for marine plankton since the extraction of oxygen weakened the intensity of the photosynthesis. The average value of the isotope content of the photosynthetic oxygen of marine phytoplankton (0.2002) (O^{18} related to O^{17}; the small content of O^{17} was neglected) is higher only by 0.0009%, i. e. higher by 1.0 ‰ than that of sea water (mass-spectrum determination in Table 2). This means that 90% of the photosynthetic oxygen occurs in water. In the case of the water weed a similar calculation yields 82%. In the experiments with the

water weed the respiration intensity was not determined. By eliminating the respiration the isotopic composition of photosynthetic oxygen approaches in all cases that of water so far that undoubtedly the total photosynthetic oxygen occurs in water. Inconsiderable deviations of the isotope content in photosynthetic oxygen from the isotopic composition of water in the experiments with the water weed and in the experiment Nr 2 with marine phytoplankton resulted from the deviation of the fractionating coefficients of the oxygen isotopes in the respiration from the assumed average value. There are 2 tables and 8 references, 2 of which are Soviet.

SUBMITTED: January 16, 1959

ALIMARIN, Ivan Pavlovich; PETRIKOVA, Mira Nikolayevna; VINOGRADOV, A.P., *akademik, otv.red.*; VAGINA, N.S., red.izd-va; MAKOGONOVA, I.A., tekhn.red.

[Inorganic ultramicroanalysis] Neorganicheskii ul'tramikroanaliz. Moskva, Izd-vo Akad.nauk SSSR, 1960. 151 p. (MIRA 13:8)
(Microchemistry) (Chemistry, Analytical)

KORENMAN, Izrail' Mironovich; VINOGRADOV, A.P., akademik, glavnyy red.; BUSHEV, A.I., prof., red.toma; ALIMARIN, I.P., red.; BABKO, A.K., red.; VAYNSHTEYN, E.Ye., red.; YERMAKOV, A.N., red.; KUZNETSOV, V.I., prof., red.; PALEY, P.N., red.; RYABCHIKOV, D.I., red.; TANANAYEV, I.V., red.; CHERNIKHOV, Yu.A., red.; VOLYNETS, M.P., red.izd-va; KASHINA, P.S., tekhn.red.

[Analytical chemistry of thallium] Analiticheskaia khimiia talliia. Moskva, Izd-vo Akad.nauk SSSR, 1960. 170 p. (MIRA 14:3)

(Thallium--Analysis)

VINOGRADOV, A.P., otv.red.; SAUKOV, A.A., red.; VLASOV, K.A., red.; SHCHERBINA, V.V., red.; KHITAROV, N.I., red.; OVCHINNIKOVA, S.V., red.izd-va; BYKOVA, V.V., tekhn.red.

[Geochemical cycles] Geokhimicheskie tsikly. Moskva, Gos. nauchno-tekhn.izd-vo lit-ry po geol. i okhrane nedr, 1960. 186 p. (MIRA 14:3)

1. International Geological Congress. 21st, Copenhagen, 1960. (Geochemistry--Congresses)

RYABCHIKOV, Dmitriy Ivanovich; GOL'BRAYKH, Yevgeniya Kas'yanovna; VINOGRADOV, A.P., akademik, glavnyy red.; ALIMARIN, I.P., red.toma; PALEY, P.N., red.toma; BABKO, A.K., red.; BUSEV, A.I., red.; VAYNSHTEYN, E.Ye., red.; YERMAKOV, A.N., red.; KUZNETSOV, V.I., red.; TANANAYEV, I.V., red.; CHERNIKHOV, Yu.A., red.; TRIFONOV, D.N., red.izd-va; POLENOVA, T.P., tekhn.red.

[Analytical chemistry of thorium] Analiticheskaia khimiia toriia. Moskva, Izd-vo Akad.nauk SSSR, 1960. 295 p. (MIRA 13:10)
(Thorium--Analysis)

STARIK, I.Ye., otv.red.; SHCHERBAKOV, D.I., akademik, zamestitel' otv.red.; BARANOV, V.I., prof., zamestitel' otv.red.; SHATSKIY, N.S., akademik, red.; POLKANOV, A.A., akademik, red.; VINOGRADOV, A.P., akademik, red.; AFANAS'YEV, S.D., red.; GERLING, E.K., prof., red.; PEKARSKAYA, T.B., kand.geologo-mineral.nauk, red.; IVANOV, B.V., red.izd-va [deceased]; GUSEVA, A.P., tekhn.red.

[Transactions of the sixth session of the Committee on the Determination of the Absolute Chronology of Geological Formations, May 22-27, 1957] Trudy shestoi sessii komissii po opredeleniiu absoliutnogo vozrasta geologicheskikh formatsii; 22-27 maia 1957 g. Moskva, 1960. 306 p. (MIRA 13:7)

1. Akademiya nauk SSSR. Komissiya po opredeliniyu absolyutnogo vozrasta geologicheskikh formatsiy.
(Geological time)

PHASE I BOOK EXPLOITATION SOV/4164

Vsesoyuznoye soveshchaniye po splavam redkikh metallov. 1st, Moscow, 1957

Redkiye metally i splavy; trudy... (Rare Metals and Alloys; Transactions of the First All-Union Conference on Rare-Metal Alloys) Moscow, Metallurgizdat, 1960. 438 p. 3,150 copies printed.

Sponsoring Agencies: Akademiya nauk SSSR. Institut metallurgii; USSR Komissiya po redkim metallam pri nauchno-tekhnicheskom komitete.

Ed.: I.K. Shapovalov; Ed. of Publishing House: O.M. Kamayeva; Tech. Ed.: P.G. Islent'yeva.

PURPOSE: This collection of articles is intended for metallurgical engineers, physicists, and workers in the machine-building and radio-engineering industries. It may also be used by students of schools of higher education.

COVERAGE: The collection contains technical papers which were presented and discussed at the First All-Union Conference on Rare-Metal Alloys, held in the Institute of Metallurgy, Academy of Sciences USSR in November 1957. Results of investigations of rare-metal alloys, titanium, and copper-base alloys with additions of rare metals are presented and discussed along with investigations of rhenium, vanadium, niobium, and their alloys. The effect of rare-earth metals

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on properties of magnesium alloys and steels is analyzed. The uses of rhenium as a dehydrating catalyst, electroplating material, and material suitable for making plugs for automobile electrical systems are discussed. Also, the effect of the addition of certain elements on the properties of heat-resistant steel is examined and alloys with special physical properties (particularly semiconductive alloys) are discussed. No personalities are mentioned. Soviet and non-Soviet references accompany some of the articles.

TABLE OF CONTENTS:

STARIK, I.Ye., otv.red.; SHCHERBAKOV, D.I., akademik, zamestitel' otv. red.; BARANOV, V.I., prof., zamestitel' otv.red.; VINOGRADOV, A.P., akademik, red.; POLKANOV, A.A., akademik, red.; SHATSKIY, N.S., akademik, red.; AFANAS'YEV, G.D.; OKRLING, E.K., prof., red.; PEKARSKAYA, T.B., kand.geol.-miner.nauk, red.; SIMKIN, S.M., red. izd-va; MAKUNI, Ye.V., tekhn.red.

[Transactions of the Seventh Commission on the Determination of the Absolute Chronology of Geological Formations] Trudy Sed'moi sessii Komissii po opredeleniiu absoliutnogo vozrasta geologicheskikh formatsii, 8-12 maia 1958 g. Moskva, 1960. 432 p. (MIRA 13:6)

1. Akademiya nauk SSSR. Komissiya po opredeleniyu absolyutnogo vozrasta geologicheskikh formatsiy. 2. Chleny-korrespondenty AN SSSR (for Starik, Afanas'yev).
(Geology, Stratigraphic)

VERNADSKIY, Vladimir Ivanovich; VINOGRADOV, A.P., akademik, otv.red.; LICHKOV, B.L., doktor geol.-min.nauk, red.; FEODOT'YEV, K.M., red.izd-va; NOVICHKOVA, N.D., tekhn.red.

[Selected works] Izbrannye sochineniia. Moskva, Izd-vo Akad. nauk SSSR. Vol.4. Book 2. 1960. 651 p. (MIRA 13:10)
(Water, Underground) (Mineralogy)

VERNADSKIY, Vladimir Ivanovich, akademik; VINOGRADOV, A.P., akademik, otv.red.; MANSKAYA, S.M., doktor biolog.nauk, red.; DROZDOVA, T.V., red.izd-va; NOVICHKOVA, N.D., tekhn.red.

[Selected works] Izbrannye sochineniia. Moskva, Izd-vo Akad. nauk SSSR. Vol.5. 1960. 422 p. (MIRA 13:5)
(GEOCHEMISTRY) (LIFE (BIOLOGY))

FERSMAN, Aleksandr Yevgen'yevich, akademik; SKRDYUCHENKO, D.P., doktor geol.-mineral.nauk, otv.red.; BELOV, N.V., akademik, red.; VINOGRADOV, A.P., akademik, red.; SHCHERBAKOV, D.I., akademik, red.; SAUKOV, A.A., red.; SHCHERBINA, V.V., doktor geol.-mineral. nauk, red.; KUN, I.R., red.izd-va; ASTROV, A.V., red.izd-va; KASHINA, P.S., tekhn.red.

[Selected works] Izbrannye trudy. Moskva, Izd-vo Akad.nauk SSSR. Vol.6. 1960. 742 p. (MIRA 13:11)

1. Chlen-korrespondent AN SSSR (for Saukov).
(Pegmatites) (Granite)

VINOGRADOV, A. P. Dir., Inst. Geochem. and Analytical Chem. im. V. I. Vernadskiy, AS USSR

"The Role and Responsibilities of Scientists."

paper presented at the Pugwash Conference on Disarmament and World Security, Moscow, 27 Nov-6 Dec 60.

S/081/61/000/017/021/166
B102/B138

AUTHOR: Vinogradov, A. P.

TITLE: Geochemical cycles of lead isotopes (Short statement [report])

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 17, 1961, 93 - 94, abstract 17T6 (Sb. "Geokhim. tsikly". M. Gosgeoltekhizdat, 1960, 5 - 15)

TEXT: Ore formation processes are considered on the basis of the isotope composition of Pb enclosed in minerals or rock. On the basis of about 1200 published ore analyses a histogram is constructed, from which it may be seen that the isotopic composition of native Pb for each continent does not form a continuous spectrum, but typical groups which correspond to metallogenetic periods, which differ for different regions to a known degree. Of these defined cases, about 20% refer to anomalous Pb, the origin of which lies mainly with the processes of plutonic metamorphism of rocks with disturbed Th:U ratio. Examples are given of the determination of the U, Th and Pb contents and the isotopic composition of Pb in three

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stony meteorites, three basalts, and 17 acid rocks. The ratio $U^{238}:Pb^{204}$ quite considerably varied within each group. Fluctuation of the Pb:U ratio was also observed within the bounds of one intrusive complex (eg. the Altay, Kazakhstan, Baltiyskiy shield). Since rock with different genesis may be the origin of native Pb, it is impossible to construct a continuous curve for the system $Pb^{206}:Pb^{204}$-$Pb^{207}:Pb^{204}$ for a given territory (continent or region). The problem consists in finding the mechanism of the separation of Pb from the rock by means of the data on the Pb isotope composition. There are 17 references. [Abstracter's note: Complete translation.]

VINOGRADOV, A.P.; TARASOV, L.S.; ZYKOV, S.I.

Isotopic composition of leads from pyrite deposits of the Urals. Geokhimiia no.6:475-489 '60. (MIRA 13:10)

1. Institut geokhimii i analiticheskoy khimii im. V.I.Vernadskogo AN SSSR, Moskva.
(Ural Mountains--Lead--Isotopes)

VINOGRADOV, A.P.; TUGARINOV, A.I.; ZYKOV, S.I.; STUPNIKOVA, N.I.

Age of rocks of the Aldan Shield. Geokhimiia no.7:563-569 '60. (MIRA 13:11)

1. V.I.Vernadsky Institute of Geochemistry and Analytical Chemistry, Academy of Sciences, U.S.S.R., Moscow, and Chair of Geochemistry of the M.V. Lomonosov Moscow State University.
(Aldan Plateau--Rocks--Ages)

VINOGRADOV, A.P.

Foreword. Trudy kom.anal.khim. 10:3-4 '60. (MIRA 13:8)
(Gases in metals)

VINOGRADOV, A.P.

Genesis of biogeochemical provinces. Trudy Biogeokhim. lab. no.11: 3-7 '60. (MIRA 14:5)

1. Institut geokhimii i analiticheskoy khimii imeni V.I.Vernadskogo AN SSSR.
(GEOCHEMISTRY) (BIOCHEMISTRY)

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S/169/61/000/009/053/056
D228/D304

AUTHOR: Vinogradov, A. P.

TITLE: Some statistical patterns in the course of Pc- and Pt-type short-period fluctuations of the earth's electromagnetic field from observations in the period of the IGY and IGU at Irkutsk. Communication I

PERIODICAL: Referativnyy zhurnal. Geofizika, no. 9, 1961, 28, abstract 9G224 (Geologiya i geofizika, no. 12, 1960, 100-111)

TEXT: The daily and yearly distributions of short-period fluctuations of the earth-current field (of the Pc-type) and the relation of the daily distribution of Pc to the activity level of the geomagnetic field are examined from the observational data of the Bayanday and Uzur stations (near Irkutsk) at the time of the IGY and IGU. In all seasons of the year, the appearances of Pc are most frequently observed around the midday hours--local time--and least frequently observed around the mid-

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night hours. The maximum for the diurnal variation of Pc (S [Pc]) is at 9 - 11 hrs., the minimum being at 23 - 01 hrs. local time. The amplitude of S(Pc) grows in summer, and, moreover, the time interval favorable for the appearance of Pc also increases in summer. The amplitude of Pc is greater in the nocturnal hours. The daily change in the mean-hourly amplitudes of Pc and S(Pc) shows a close correlation. The Pc recorded at Uzur by equipment with a higher sensitivity than that at Bayanday display a more even distribution for the hours of the day. The form of S(Pc) to some extent depends on the sensitivity of the equipment; daytime Pc (the most intense) may be detected even in the recordings of low-sensitive equipment, but the sensitivity of the equipment must be increased for registering the weak, nocturnal Pc. The number of cases of Pc grows, and the duration of the period favorable for the appearance of Pc becomes greater, as the activity of the geomagnetic field increases. On disturbed days, Pc with periods of 10 - 16 sec. are more often observed, while on quiet days, the corresponding period is 20 - 30 sec. The yearly distribution of the frequency of Pc appearances and the yearly variation of the mean-monthly amplitudes of Pc have the

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D228/D304

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form of a simple wave with a minimum in December and a maximum in July. There is a certain parallelism between the yearly changes in the number of cases of Pc and the K and C indices of geomagnetic activity. The investigation of the statistical patterns of Pc may be useful when carrying out electric-prospecting work by the method of telluric currents and magneto-telluric profiling. [Abstracter's note: Complete translation.]

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VINOGRADOV, A.P., akademik; ZADOROZHNYY, I.K.; KNORRE, K.G.

Argon in meteorites. Meteoritika no.18:92-99 '60.
(MIRA 13:5)
(Meteorites--Analysis) (Argon)

VINOGRADOV, A.P., akademik; TUGARINOV, A.I.

Some determinations of the absolute age serving as reference data to the world geochronological scale. Dokl. AN SSSR 134 no.5:1158-1161 O '60. (MIRA 13:10)

1. Institut geokhimii i analiticheskoy khimii im. V.I.Vernadskogo Akademii nauk SSSR.

(Geological time)

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B016/B067

17.1156

AUTHORS: Vinogradov, A. P., Academician, Kutyurin, V. M., Ulubekova, M. V., and Zadorozhnyy, I. K.

TITLE: Isotopic Composition of the Oxygen of Photosynthesis and Respiration

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 6, pp. 1486-1489

TEXT: In an earlier paper (Ref. 1) the authors had arrived at the conclusion that the difference between the isotopic composition of the oxygen of photosynthesis and of water oxygen can be explained. This is due to the fractionation of the oxygen isotopes during respiration, which enriches the oxygen remaining after respiration with O^{18} thus making it heavier. Since photosynthesis and respiration take place simultaneously, the oxygen analyzed is that which was not consumed in respiration. Its isotopic composition depends on the ratio of the intensities of these two processes, furthermore on the fractionation coefficient of the oxygen isotopes during respiration. The authors are of the opinion that the mean

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value of this coefficient $\alpha = 1.018$ assumed in publications (Ref. 3) can hardly be used for the calculations in the individual case. To determine the quantitative influence of respiration on the isotopic composition of the oxygen of photosynthesis they tried to determine simultaneously the α of respiration and the isotopic composition. For this purpose they used cultures of Scenedesmus obliquus and the water plant Elodea canadensis which were investigated in an apparatus (Fig. 1). Fig. 2 shows the apparatus used for the purification of the gas. The experiments with both types of plants were made with an exposure of 5500 lux and at pH 7. The remaining conditions are given in Tables 1 and 2. The data obtained (Table 1) show that the fractionation coefficient of the oxygen isotopes during the respiration of both plants depends on the physiological state of the plants. In endurance tests (18-20 h), when plants are starving, the respiration intensity is reduced to 1/5 to 1/10, while the coefficient α, however, rises, i.e., the degree of fractionation increases under unfavorable conditions. This recalls the metabolism of sulfur bacteria (Ref. 7). The difference between the fractionation coefficient of Scenedesmus and Elodea indicates the specifity of the oxygen metabolism in different types of plants. This confirms the above mentioned doubts

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as to the usability of a mean coefficient α for all plants. As to the use of this coefficient for each type of plant the authors hold the opinion that the influence exerted by respiration on the isotopic composition (on the example of Scenedesmus and Elodea) can be determined by determining α under the conditions of photosynthesis. The authors arrive at the conclusion that the opinion expressed in the beginning concerning the "rendering heavier" of photosynthesis oxygen by respiration is correct, and they derive equations (1) and (2) for the isotopic composition of the oxygen remaining after respiration as well as for the respiration intensity. K. P. Florenskiy is mentioned (Ref. 4). There are 2 figures, 2 tables, and 10 references: 4 Soviet and 3 US.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo Akademii nauk SSSR (Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy of the Academy of Sciences, USSR)

SUBMITTED: July 29, 1960

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VINOGRADOV, A.P., akad.; DEVIRTS, A.L.; DOBKINA, E.I.; MARKOVA, N.G.; MARTISHCHENKO, L.G.; MERGASOV, G.G., red. izd-va; POLYAKOVA, T.V., tekhn. red.

[Determination of absolute age by C^{14} using a proportional counter; description of the construction method and results] Opredelenie absoliutnogo vozrasta po C^{14} pri pomoshchi proportsional'nogo schetchika; opisanie metoda konstruktsii i rezul'tatov. Moskva, Izd-vo Akad. nauk SSSR, 1961. 57 p. (MIRA 14:11)
(Radiocarbon dating)

SEREBRYANNYY, L.R.; VINOGRADOV, A.P., akademik, otv. red.; NEYSHTADT, M.I., doktor geogr. nauk, red.; SPRYGINA, L.I., red. izd-va; VOLKOVA, V.G., tekhn. red.

[Radiocarbon dating and its use for the study of Quaternary paleogeography; for the Sixth Congress of INQUA in Warsaw, 1961] Radiouglerodnyi metod i ego primenenie dlia izucheniia paleogeografii chetvertichnogo perioda; k shestomu kongressu INQUA v Varshave 1961. Moskva, Izd-vo Akad. nauk SSSR, 1961. 225 p. (MIRA 14:9)
(Radiocarbon dating) (Paleogeography)

TAUSON, L.V.; VINOGRADOV, A.P., akademik, otv. red.; KORIN, I.Z., red. izd-va; GOLUB', S.P., tekhn. red.

[Geochemistry of rare elements in granitoids] Geokhimiia redkikh elementov v granitoidakh. Moskva, Izd-vo Akad.nauk SSSR, 1961. 229 p. (MIRA 15:1)
(Metals, Rare and minor) (Geochemistry)

PHASE I BOOK EXPLOITATION SOV/5777

Vinogradov, A. P., Academician, and D. I. Ryabchikov, Doctor of Chemical Sciences, Professor, Resp. Eds.

Metody opredeleniya i analiza redkikh elementov (Methods for the Detection and Analysis of Rare Elements) Moscow, Izd-vo AN SSSR, 1961. 667 p. Errata slip inserted. 6000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo.

Ed. of Publishing House: M. P. Volynets; Tech. Ed.: O. Gus'kova.

PURPOSE: This book is intended for analytical chemists and for students of analytical chemistry.

COVERAGE: The handbook was published in accordance with a decision of the Vsesoyuznoye soveshchaniye po analizu redkikh elementov (All-Union Conference on the Analysis of Rare Elements) called

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together by the Gosudarstvennyy nauchno-tekhnicheskiy komitet Soveta Ministrov SSSR (State Scientific and Technical Committee of the Council of Ministers of the USSR) and the Academy of Sciences USSR in December, 1959. The material is arranged in accordance with the group position of elements in the periodic system, and each section is prefaced by an article discussing the analytical methods most used in the Soviet and non-Soviet countries. Each section deals with the physical, physicochemical, and chemical methods for the analysis of raw materials, semi-products, and pure metals, and is accompanied by an extensive bibliography listing works published in the field in recent years. The following are mentioned for their help in preparing the book for publication: I. P. Alimarin, G. N. Bilimovich, ... I. Busev, E. Ye. Vaynshteyn, M. P. Volynets, V. G. Goryushina, A. M. Dymov, S. V. Yelinson, O. Ye. Zvyagintsev, G. M. Kolosova, Ye. K. Korchemnaya, V. I. Lebedev, G. A. Malofeyeva, B. N. Melent'yev, V. A. Nazarenko, I. I. Nazarenko, T. V. Petrova, N. S. Poluektov, A. I. Ponomarev, V. A. Ryabukhin, N. S. Stroganova, and Yu. A. Chernikhov.

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VINOGRADOV, A.P.

report to be submitted for the IUPAC 21st Conference and 18th Intl. Congress of Pure and Applied Chemistry, Montreal, Canada, 2-12 August 1961

GORODISKIY, A. V., Academy of Sciences UkSSR, Kiev - "The oscillographic investigation of the electrochemical kinetics in fused salts" (Section A.3,e.2 - Session I, 11 Aug 61, afternoon)

GURVICH, L. V., Academy of Sciences USSR, Moscow - "The calculation of thermodynamic functions of gases in a wide temperature range" (Section A.3,c,(1), Session II - 8 Aug 61, afternoon)

KARGIN, V. A., Physico-Chemical Institute imeni L. Ya. Karpov, Moscow - "Vitrification phenomena in crystallin polymers" (Section B.4 - 7 Aug 61, afternoon)

KISELEV, A. V., Moscow State University imeni M. V. Lomonosov - "The influence of surface heterogeneity and adsorbate-adsorbate interaction on the adsorption properties of solid surfaces" (Joint Session, Sections A.2 and B.1 - 8 Aug 61, morning)

KONDRAT'YEV, V. N., Institute of Chemical Physics, Academy of Sciences USSR, Moscow - "The NO_2 radical" (Section A.1, Session I - 11 Aug 61, morning) (Also, Section A.1, Chairman, Session I - 8 Aug 61, morning)

KUZNETSOV, V. I., Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Academy of Sciences USSR - "A novelty in the use of organic co-precipitants for concentration of small amounts of the elements" (To be presented in Russian) (Section C.2 - 11 Aug 61, morning)

LAVRUKHINA, A. K., RAKOVSKIY, E. E., and MOSKALEVA, L. P., Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Academy of Sciences USSR - "New data on radiochemical investigations of the processes of fission and fragmentation induced by high energy protons" (Section A.4 - 8 Aug 61, afternoon)

LOVACHEV, L. A., Academy of Sciences USSR, Moscow - "Determination of rate constants of elementary processes from flame velocities as a function of temperature, pressure, and molecular transfer coefficients" (Section A.3,b,(2) - 7 Aug 61, afternoon)

MURDIATH, B. (Probably MURDYACH, S.) and GERASIMOV, Y. I., Moscow State University imeni M. V. Lomonosov - "Study of the thermodynamic properties of the system iron-latinum" (Section A.3,c,(3), Session II(A) - 11 Aug 61, morning)

PANCHENKOV, G. M., BOLCHIN, A. K., MALAKOV, V. F., and SHEKYN, Ya., Moscow State University imeni M. V. Lomonosov - "Emission of complex ions in solid-phase reactions" (Joint Session, Sections A.2 and B.1, 8 Aug 61, morning)

SEMENOV, N. N., Institute of Chemical Physics, Academy of Sciences USSR, Moscow - "Certain chemical reactions at reduced temperatures and related problems of energy transfer" (To be presented in Russian) (Plenary lecture - Saturday, 12 Aug 61)

SHILOV, Ye. A., Academy of Sciences UkSSR, Kiev - "The active agents and the intermediary complexes in the heterolytic reactions of halogenation of the organic compounds" (Section A.1, Session II - 11 Aug 61, morning)

SMIRNOV, M. V., Electrochemistry Institute, Sverdlovsk - "The equilibrium between the titanium subgroup metals and the salt melts" (Section B.3 - 7 Aug 61, afternoon)

TAL'ROZE, V. L., Institute of Chemical Physics, Academy of Sciences USSR - "Reactions of ions and molecules in the gas phase" (Section A.1, Session I - 9 Aug 61, afternoon)

TERENIN, Aleksandr N., Leningrad State University imeni A. A. Zhdanov - (Section A.1, Chairman, Session I - 8 Aug 61, afternoon Session) (Also on program for Section A.1, Session I - 9 Aug 61, afternoon)

TERENIN, Aleksandr N., VILESOV, F. I., KURMATOV, B., and DODONOVA, N., Leningrad State University imeni A. A. Zhdanov - "Mass-spectrometry and luminescence of radicals in the photodissociation and photoionization of molecules by vacuum ultra-violet radiation" (Section A.1, Session I - 9 Aug 61 - afternoon)

TUNITSKIY, N. N., Scientific Research Physico-Chemical Institute imeni L. Ya. Karpov - "On the dissociation of molecules on electron impact and the early states of radiation-chemical processes" (Section A.1, Session I - 8 Aug 61, afternoon)

YAKISHCHIN, Emmanuil Ye., and KOROLEV, V. V., Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Moscow - "The plasma generator and its use for spectral analysis of alloys and rocks" (Section C.1 - 8 Aug 61, morning)

VINOGRADOV, A. P., LAVRUKHINA, A. K., and REVINA, L. D., Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Academy of Sciences USSR - "The study of nuclear reactions in iron meteorites under the action of high energy protons" (Section A.4 - 8 Aug 61, afternoon)

YAKOVLEV, Yu. V., and ALIMARIN, I. P., Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Academy of Sciences USSR - "The determination of trace impurities in some materials for semiconductor techniques by radio-activation analysis" (To be presented in Russian) (Section C.1 - 8 Aug 61, afternoon)

YEROFEYEV, Boris V., Institute of Physical-Organic Chemistry, Minsk - "The effect of donor and acceptor admixtures on the decomposition rate of solids" (Section A.2 - 8 Aug 61, afternoon)

VINOGRADOV, A. P.

"Geochemical cycles of isotopes of lead"

Paper submitted at the International Geological Congress XXI ~~Session~~ ~~1960~~ (Reports of Soviet Geologists) Problem No. 1, 15-24 Aug. 61, Montreal Canada

VINOGRADOV, A.P.

Origin of the matter of the earth's crust. Report No. 1.
Geokhimiia no.1:3-29 '61. (MIRA 14:3)

1. V. I. Vernadzky Institute of Geochemistry and Analytical Chemistry, Academy of Sciences U.S.S.R., Moscow.
(Geochemistry)

VINOGRADOV, A. P., KUTYURIN, V. M., (USSR)

"The Mechanism of Dehydration of Water in the Process of Photosynthesis."

Report presented at the 5th Int'l. Biochemistry Congress, Moscow, 10-16 Aug 1961.

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B107/B147

3.2440 (1041 only)
3.1900 (1057, 1166)

AUTHORS: Vinogradov, A. P., Lavrukhina, A. K., Revina, L. D.

TITLE: Nuclear reactions in iron meteorites

PERIODICAL: Geokhimiya, no. 11, 1961, 955 - 966

TEXT: The authors report on a radiochemical analysis of the fission products of iron bombarded with 660-Mev protons. They attempted to clarify the cosmogenic formation of various isotopes in iron meteorites. The synchrocyclotron of the Laboratoriya yadernykh problem Ob"yedinennogo instituta yadernykh issledovaniy (Laboratory for Nuclear Problems of the Joint Institute of Nuclear Research) was used to bombard 100 to 500 mg of iron powder with about 10^{12} protons/sec·cm^2 for 0.5 to 2 hr. The resulting isotopes were identified according to half-life, kind and energy of radiation. A simplified magnetic beta spectrometer and a gamma scintillation spectrometer were used for this purpose. A total of 38 isotopes with atomic numbers 4 - 27 and half-lives from 8 min to 3 years were found. The production cross sections and yields of stable and undetected radioisotopes were calculated by interpolation (Fig. 2). On the strength of

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Nuclear reactions in iron meteorites

these data, the number of cosmogenic nuclei was calculated, which are formed by fission of Fe^{56} in the center of a meteorite of 10 cm diameter within $4.5 \cdot 10^9$ years (Table 4). Results: Within the period mentioned, about 10^{-7} g of cosmogenic isotopes per gram of meteorite is formed, among them the stable isotopes Ar^{36}, Ar^{38}, K^{40}, Sc^{45}, and V^{50}. The concentration calculated for these isotopes agrees with the observed concentration and is about 10^{-9} g/g of meteorite. This explains the anomalies observed in the isotopic composition of potassium and argon. Shifts toward the ratios in terrestrial rocks are to be expected also for the isotopes of vanadium, titanium, and other elements. The equilibrium values for the activity of long-lived cosmogenic nuclei in iron meteorites were calculated. A comparison with values measured in various meteorites shows deviations by a factor of ≤ 5. The mean production cross section for nuclei with an atomic weight of about 20 and about 40 was found to be 1.2 and 0.5 Bev. The authors thank V. V Malyshev, L. M Saratova, and Su Hung-kuei for help in the experimental work. L. K. Levskiy and V. Kuznetsov are mentioned. There are 4 figures, 7 tables, and 30 refer.

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Nuclear reactions in iron meteorites

ences: 6 Soviet and 24 non-Soviet. The three most recent references to English-language publications read as follows: P. Eberhardt, J. Geiss. Radioactive and stable isotopes in meteorites. Physikalisches Institut, University of Berne, Switzerland, September, 1960; M. Honda, J. R. Arnold. Geochim. Cosmochim. Acta, 23, 219, 1961; M. Honda, J. P. Shedlovsky, J. R. Arnold. Geochim. Cosmochim. Acta 22, 133, 1961.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR, Moskva (Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy AS USSR, Moscow)

SUBMITTED: July 25, 1961

Fig. 2. Distribution of fission products of iron by 660-Mev protons for each element as a function of the mass number A. Legend: (y) production cross section σ in mb; (o) experimental values; (•) interpolated values. Table 4. Content of stable isotopes in fission products of iron. Legend: (1) isotope; (2) production cross section σ_i in mb; (3) cumulative production cross section $\sigma_{\Sigma A_i}$ of nucleus A_i with account of the contribu-

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VINOGRADOV, A.P.

Geochemistry in foreign countries. Izv.AN SSSR.Ser.geol. 26 no.7:3-11 Jl '61. (MIRA 14:7)
(Geochemistry)

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AUTHORS: Vinogradov, A. P., Academician, Devirts, A. L., and Dobkina, E. I.

TITLE: Increase of the content of active carbon due to nuclear explosions

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 3, 1961, 688-691

TEXT: The authors studied the C^{14} content in the wood of certain annual rings in the ash tree (Fraxinus excelsior) to determine the concentration of C^{14} in the atmosphere of the respective years. Recently it has been found (Ref. 1: O. I. Leypunskiy, Atomnaya energiya, 4, no. 1, 63, 1958, Ref. 2: A. D. Sakharov, ibid, 4, no. 6, 576) that not only long-lived isotopes, such as Sr^{90}, but also C^{14} ($T_{1/2}$ = 5568 ± 30 years) are responsible for the aftereffects of nuclear explosions in time. So far, no data are available on increase and distribution of C^{14} in the "exchange-

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basin." It is, however, known that from 1953-1955 onward the C^{14} content in the atmosphere increased by 4.3-5% per year, irrespective of the place where nuclear explosions had occurred, and increased by 25-30% until 1959. The ash tree examined was felled near Moscow (Zvenigorod forest) at the end of June, 1960. It had a diameter of 19 cm and an age of 45 years. 15 annual rings (years 1959-1945) were recovered from 2-3 cm thick targets. Separate wood samples from the individual years were burned in an oxygen stream, and ethane was synthesized from the resultant CO_2 (for methods cf. Ref. 10, authors' paper, Geokhimiya no. 8, 3, 1956 and 663, 1959). Calcium carbide containing the carbon from the wood samples was decomposed by distilled Artesian water from a depth of 160 m for the purpose of obtaining acetylene and eliminating contamination by tritium which is also due to nuclear explosions. To remove traces of radon and its decay products, the resultant gas was stored in glass containers for at least 25 days (= 6-7 fold $T_{1/2}$ of Rn which is 3.82 days) prior to counting. C^{14} activity in ethane was determined in a propertional counter filled with gas (gas pressure: 2 atm). 2 g of carbon were contained in the whole counter. Apparatus and methods applied are

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described in the authors' paper of Ref. 10. The wood of a 30-year-old birch felled in Kamchatka in 1908 was used as a recent standard, to which the activity of the test samples was referred. Fig. 2 shows the increase of the C^{14} content in the ash. Δ^{14} denotes the difference between the activity of the ash samples and that of the standard (zero level). The authors conclude therefrom that the C^{14} content in the annual rings of the ash has rapidly increased between 1956 and 1960, i. e., by 5.5% per year on the average. The difference between the zero levels of ash and birch is due to the "industrial effect", i.e., dilution of atmospheric CO_2 by inactive carbon owing to the intense combustion of coal and petroleum in the course of several decades. The C^{14} increase in the ash thus corresponds to that in the atmosphere during the last few years. The authors point out that this content may further increase by dislocation from the stratosphere into the troposphere. Though a reduced absorption of C^{14} from the atmosphere by plants was expected because of fractionation of the carbon isotopes during photosynthesis, the effect

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of C^{14} separation becomes less clear owing to the latitude effect and, possibly, the seasonal effect. The C^{14} content in plants thus increases more than in the atmosphere. The authors express their gratitude to V. Ye. Moskaleva, V. M. Kutyurin, D. F. Frantsuzov, and R. V. Bronskaya for selection and supply of wood samples. There are 3 figures and 10 references: 3 Soviet-bloc and 7 non-Soviet-bloc. The reference to the English-language publication reads as follows: Ref. 8, E. H. Willis, Nature, 185, no. 4712, 552 (1960).

SUBMITTED: January 2, 1961

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B103/B208

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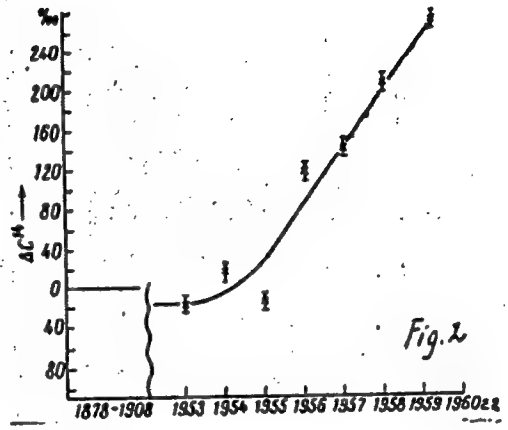

Fig. 2

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RYABCHIKOV, Dmitriy Ivanovich; TSITOVICH, Igor' Konstantinovich; VINOGRADOV, A.P., akademik, otv. red.; VOLYNETS, M.P., red.; DOROKHINA, I.N., tekhn. red.

[Ion exchange resins and their uses] Ionoobmennye smoly i ikh primenenie. Moskva, Izd-vo AN SSSR, 1962. 185 p. (MIRA 16:8)

(Ion exchange resins)

BUSEV, Aleksey Ivanovich; VINOGRADOV, A.P., akademik, glav. red.; ALIMARIN, I.P., red.; BABKO, A.K., red.; VAYNSHTEYN, E.Ye., red.; YERMAKOV, A.N., red.; KUZNETSOV, V.I., red.; PALEY, P.N., red.; RYABCHIKOV, D.I., red.; TANANAYEV, I.V., red.; CHERNIKHOV, Yu.A., red.; VOLYNETS, M.P., red.; MAKUNI, Ye.V., tekhn. red.

[Analytical chemistry of molybdenum]Analiticheskaia khimiia molibdena. [By] A.I.Busev. Moskva, Izd-vo Akad. nauk SSSR, 1962. 300 p. (MIRA 16:1)

(Molybdenum--Analysis)

VINOGRADOV, A.P.

Atomic abundances of chemical elements on the sun and in stony meteorites. Geokhimiia no.4:291-295 '62. (MIRA 16:7)

1. Vernadsky Institute of Geochemistry and Analytical Chemistry, Academy of Sciences, U.S.S.R., Moscow.
(Sun) (Meteorites) (Chemical elements)

VINOGRADOV, A. P.

"Biochemical provinces"
To be presented at the Geochemical Society International
Meeting on Organic Processes, 10-12 Sep 1962.

Inst. of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Moscow

VINOGRADOV, Aleksandr Pavlovich; KUTYURIN, V.M., red. izd-va; GOLUB', S.P., tekhn. red.

[Isotopes of oxygen and photosynthesis] Izotopy kisloroda i fotosintez. Moskva, Izd-vo Akad. nauk SSSR, 1962. 33 p. (MIRA 15:6)
(Timiriazevskie chteniia, no.22)
(Photosynthesis) (Oxygen—Isotopes)

RYABCHIKOV, Dmitriy Ivanovich; TSITOVICH, Igor' Konstantinovich; VINOGRADOV, A.P., akademik, otv. red.; VOLYNETS, M.P., red.; DOROKHINA, I.N., tekhn. red.

[Ion exchange resins and their uses] Ionoobmennye smoly i ikh primenenie. Moskva, Izd-vo Akad.nauk SSSR, 1962. 185 p. (MIRA 15:7)

(Ion exchange resins)

VINOGRADOV, A.P., akademik, glav. red.; KHITAROV, N.I., otv. red.; SHLEPOV, V.K., red. izd-va; VOLKOVA, V.G., tekhn. red.

[Experimental investigations of abyssal processes; from papers of a symposium] Eksperimental'nye issledovaniia v oblasti glubinnykh protsessov; po materialam simpoziuma. Moskva, Izd-vo Akad. nauk SSSR, 1962. 239 p. (MIRA 15:7)

1. Simposium po eksperimental'nym issledovaniyam v oblasti glubinnykh protsessov, 1960. 2. Institut geokhimii i analiticheskoy khimii im. V.I.Vernadskogo AN SSSR (for Khitarov).
(Earth—Surface)

AVTOKRATOVA, Tat'yana Dmitriyevna; VINOGRADOV, A.P., akademik, glav. red.; TANANAYEV, I.V., akademik, red. toma; RYABCHIKOV, D.I., doktor khim. nauk, red. toma; GERLIT, Yu.B., red.; SUSHKOVA, L.A., tekhn.red.; GUS'KOVA, O.M., tekhn. red.

[Analytical chemistry of ruthenium]Analiticheskaia khimiia ruteniia. Moskva, Izd-vo Akad. nauk SSSR, 1962. 263 p. (MIRA 15:11)

(Ruthenium—Analysis)

STARIK, I.Ye., otv. red.; SHCHERBAKOV, D.I., akademik, zam. otv. red.; BARANOV, V.I., prof., zam. otv. red.; VINOGRADOV, A.P., akademik, red.; POLKANOV, A.A., akademik, red.; AFANAS'YEV, G.D., red.; GERLING, E.K., prof., red.; PEKARSKAYA, T.B., kand. geol.-miner. nauk, red.; ARON, G.M., red. izd-va; GALIGANOVA, L.M., tekhn. red.

[Transactions of the Tenth Session of the Commission on the Determination of the Absolute Age of Geological Formations, June 5-10, 1961] Trudy desiatoi sessii...; 5-10 iiunia 1961 g. Moskva, Izd-vo Akad. nauk SSSR, 1962. 379 p. (MIRA 15:11)

1. Akademiya nauk SSSR. Komissiya po opredeleniyu absolyutnogo vozrasta geologicheskikh formatsiy. 2. Chlen-korrespondent Akademii nauk SSSR (for Starik, Afanas'yev).
(Geological time)

VALYASHKO, Mikhail Georgiyevich, prof.; VINOGRADOV, A.P., akad., red.; MEDVEDEV, V.S., red.; YERMAKOV, M.S., tekhn. red.

[Geochemical features of the formation of deposits of potassium salts] Geokhimicheskie zakonomernosti formirovaniia mestorozhdenii kaliinykh solei. Pod red. A.P.Vinogradova. Moskva, Izd-vo Mosk. univ., 1962. 396 p. (MIRA 15:3)
(Potassium salts)

VINOGRADOV, A.P.

Zone melting as a method of studying some radial processes in the earth. Geokhimiia no.3:269-270 '62. (MIRA 15:4)

1. Vernadskiy Institute of Geochemistry and Analytical Chemistry, Academy of Sciences, U.S.S.R., Moscow.
(Zone melting)

VINOGRADOV, A.P.; TUGARINOV, A.I.

Geochronology of the Pre-Cambrian. Biul.Kom.po opr.abs.vozr.geol. form. no.5:8-11 '62. (MIRA 15:11)
(Geological time)

VINOGRADOV, A.P.; DEVIRTS, A.L.; DOBKINA, E.I.; MARKOVA, N.G.

Determination of the absolute age by the C^{14}. Report No.3. (MIRA 15:7)
Geokhimiia no.5:387-402 '62.

1. V.I. Vernadskiy Institut of Geochemistry and Analytical Chemistry, Academy of Sciences, U.S.S.R., Moscow.
(Radiocarbon dating)

VINOGRADOV, A.P.

Average content of chemical elements in the main types of crustal igneous rocks. Geokhimiia no.7:555-571 '62. (MIRA 15:7)

1. Institut geokhimii i analiticheskoy khimii imeni V.I. Vernadskogo AN SSSR, Moskva.
(Chemical elements) (Rocks, Igneous)

VINOGRADOV, A.P.; VDOVYKIN, G.P.

Diamonds in stone meteorites. Geokhimiia no.8:715-720 Ag '62.
(MIRA 16 :9)

1. Institut geokhimii i analiticheskoy khimii imeni V.I.Vernadskogo AN SSSR, Moskva.

VINOGRADOV, A.P.; GRINENKO, V.A.; USTINOV, V.I.

Isotope composition of sulfur compounds in the Black Sea. Geokhimiia no.10:851-873 '62. (MIRA 16:4)

1. Institut geokhimii i analiticheskoy khimii imeni V.I. Vernadskogo AN SSSR, Moskva.
(Black Sea—Sulfur isotopes)

S/011/62/000/011/001/001
AC06/A101

AUTHOR: Vinogradov, A. P.

TITLE: Origin of the Earth's shells

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geologicheskaya, 1962, no. 11, 3 - 17

TEXT: In a report delivered at the general assembly of the USSR Academy of Sciences on June 30, 1962, the author investigated the origin of the Earth's shells and their different physico-chemical nature by a new experimental approach. He supports the concept of the cold origination process of the Earth. During the whole geological history the upper layers of the Earth were enriched with more low-melting and less dense substances than those of the Earth mantle. It must be considered that under the effect of heat from the radioactive decay of the mantle (the meteorite substance) melting and degassing of the low-melting and low-volatile substances take place. An analogy of this process is represented by zonal melting. The analogy of the melting and degassing of the mantle and of zonal melting consists in the fact that the liquid (low-melting phase) passes through

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multiple diffusion through the solid phase of the mantle and is finally enriched (in the zone of the Earth crust) with low-melting and low-volatile components. The author performed a number of experiments with substances of stone meteorites. These experiments show that if heat passes through the meteorite substance (or the mantle) at a considerable thermal gradient, zonal melting causes, as a result of melting and degassing, its differentiation into a refractory phase - the dunites i.e. the material of the mantle, and the basalts (the substance of the Earth crust); as a result, individual compounds or chemical elements are correspondingly distributed between these two phases. The method of zonal melting in the solution of geological problems is most promising. It has proved that 1) the substance of the mantle is identical with the composition of meteorites; 2) the thickness of the Earth's crust is a function of the planet radius 3) during the whole evolution of the Earth, a grandiose, radial process of melting and degassing of the mantle substance takes place under the effect of radioactive heat and results in the formation of continents, the oceans and the atmosphere, which are thus of secondary origin. Recommendations for further research are given. There are 16 figures and 1 table.

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Origin of the Earth's shells

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ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. N. Vernadskogo, AN SSSR, Moskva (The Moscow Institute of Geochemistry and Analytical Chemistry imeni V. N. Vernadskiy, AS USSR)

SUBMITTED: July 6, 1962

Card 3/3

VINOGRADOV, A.P.

Discussion on the mechanics of the separation of radiogenic gases. Geokhimiia no.12:1108 '62. (MIRA 16:9)
(Argon)

VINOGRADOV, A.P.; TUGARINOV, A.I.

Geochronology of the pre-Cambrian. Analele geol geogr 16 no.2: 68-77 Ap-Je '62.

VINOGRADOV, A.P.

"Isotopic composition of sulphur in sedimentary sulphides."

Report presented at the Conference on Chemistry of the Earth's Crust Moscow, 14-19 Mar 63.

A.P. VINOGRADOV (USSR)

"Gase condition of the Earth."

Report presented at the Congerence on Chemistry of the Earth's Crust, Moscow, 14-19 Mar 63.

MALYUGA, Dmitriy Petrovich; VINOGRADOV, A.P., akademik, otv. red.; ZNAMENSKIY, V.L., red. izd-va; NOVICHKOVA, N.D., tekhn. red.; DOROKHINA, I.N., tekhn. red.

[Biogeochemical method of prospecting for ore deposits; principles and practices] Biogeokhimicheskii metod poiskov rudnykh mestorozhdenii; printsip i praktika poiskov. Moskva, Izd-vo Akad. nauk SSSR, 1963. 263 p. (MIRA 16:6)
(Geochemical prospecting)